SND100 Series NanoDrive Driver (** CE Approved)

2 Phase DC Type NanoDrive Stepping Driver Units

二相直流步进驱动器

Features

- Maximum resolution; 1/200,000 per revolution
- Minimum step angle; 0.0018 degree (at 1/1000 division)
- Selectable 16 types resolutions (Maximum 1/1000 division)
- Same step angle with 5 phase stepping motor is driven economically depending on resolution
- If 1mm pitch ball gear is used, each 5nm pitch control is available.
- Even if inching feed (jogging), follow-up control is available
- Peculiar vibration of stepping motor is depressed and driving of very low vibration is available.
- There is no torque reduction when nano driving
- Control module and power module are individually salable for great quantity.
- Lower cost than half of conventional one.
- Compact design; size: 106 x 67 x 26.6mm

1. Specifications

Model 型号	**SND100-220L**
Drive Methods 驱动方式	Uni-polar , constant current chopper
Power Requirement 电源规格	DC 24V ± 10%
Power Consumption 电能消耗	85W or less
Output Current 输出电流	2.0A/phase maximum
Resolution 分辨率	Basic Step Angle:1.8º 1/1 , 1/2 , 1/2.5 ,1/5 , 1/8 , 1/10 , 1/20 , 1/25 , 1/40 , 1/50 , 1/100 , 1/125 , 1/200 , 1/250 , 1/500 , 1/1000
Function 功能	Auto-current down
Input Pulse Types 脉冲输入方式	STEP and DIRECTION (1 Pulse) or CW/CCW pulse (2 Pulse) selectable. All opto-isolated. Voltage H=4 – 5V, L=0-0.5V, Input resistance 220ohms
Insulation Resistance 绝缘电阻	100M ohms or better with 500V potential applied between case and power input terminals and signal I/O terminals
Operating Environment 操作环境	Temperature:0°C~40° C No freezing Humidity:Less than 80% No Condensation
Storage Environment 收藏环境	Temperature:-10°C~+60°C No freezing Humidity:Less than 80% No Condensation
Operating Height 操作高度	Less than 1,000m from sea level.
Atmosphere 气氛	In the room without corrosive gas, inflammable gas and dust. Without splashing water and oil.
Accessories 附属品	Connectors and pin receptacles
Weight 重量	120g

2. Applicable Motor Range

Type 类型	Motor Size (NEMA) 马达体型	Motor Model 型号	Max. Holding Torque (kgcm) 静力矩	Rotor Inertia (gcm^2) 转子惯量	Step Angle Half/Full 步矩角	Phase Current (Amps) 额定电流	Voltage (Vdc) 电压	Phase Resistance (Ohms) 相绝缘	Motor Weight (Kg) 马达重量
STANDARD (PS Series) 标准（PS 系列）	17	PS 443-01A (B)	1.1	17	1.8º/0.9º	0.95	4.0	4.2	0.20
		PS 444-02A (B)	1.6	25	1.8º/0.9º	0.80	6.0	7.5	0.22
		PS 445-01A (B)	2.2	36	1.8º/0.9º	1.20	4.0	3.3	0.26
	23	PS 464-01A (B)	2.9	60	1.8º/0.9º	1.10	4.0	3.6	0.34
		PS 466-01A (B)	6.0	125	1.8º/0.9º	1.20	6.0	5.0	0.55
		PS 468-21A (B)	9.0	220	1.8º/0.9º	1.50	5.4	3.6	0.85
		PS 4610-01A (B)	10.8	350	1.8º/0.9º	1.88	6.0	3.2	1.40
	34	PS 496-02A (B)	12.5	560	1.8º/0.9º	1.25	5.5	4.4	1.45
		PS 499-02A (B)	22.0	1100	1.8º/0.9º	2.00	6.0	3.0	2.16
		PS 4913-02A (B)	35.0	1800	1.8º/0.9º	1.80	12.0	6.7	3.60
HI-TORQUE (PF Series) 高扭矩力（PF 系列）	17	PF 445-01 A (B)	3.2	68	1.8º/0.9º	1.2	4.0	3.3	0.35
	23	PF 464-02A (B)	4.3	120	1.8º/0.9º	2.0	2.8	1.4	0.47
		PF 466-02A (B)	8.5	280	1.8º/0.9º	2.0	3.6	1.8	0.70
		PF 468-02A (B)	13.5	480	1.8º/0.9º	2.0	4.5	2.25	1.00
	34	PF 496-01A (B)	20.0	1400	1.8º/0.9º	2.0	4.4	2.2	1.75
		PF 499-01A (B)	44.0	2700	1.8º/0.9º	2.0	6.4	3.2	2.80
		PF 4913-01A (B)	66.0	4000	1.8º/0.9º	2.0	7.6	3.8	3.93

Note : Motor model ending with A - single shaft Motor model ending with B - double shaft

Motor Electrical Specifications

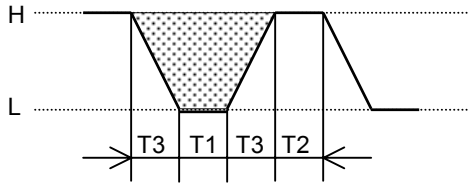
Dielectric Strength 电击强度	No abnormality detected after the application of 0.5KV at 50 Hz between motor windings and frame for duration of one minute
Insulation Resistance 绝缘电阻	100 Mohms or better with 500V potential applied between motor windings and frame at normal ambient temperature and humidity
Insulation Class 绝缘等级	Class B
Operating Environment Temperature 操作环境温度	0ºC ~ + 40ºC

Motor Mechanical Specifications

Shaft Radial Play 轴径向跳动	NEMA 17 motor	0.0006 in. (max) at 15.87 oz. force 0.015mm (max) at 450g
	NEMA 23/34 motor	0.0008 in. (max) at 15.87 oz. force 0.020mm (max) at 450g
Shaft Axial Play 轴向跳动	NEMA 17 motor	0.0008 in. (max) at 15.87 oz. force 0.020mm (max) at 450g
	NEMA 23/34 motor	0.00031 in. (max) at 15.87 oz. force 0.080mm (max) at 450g
Shaft Runout		0.0005 T.I.R. (inches) (at shaft end)
Step Angle Accuracy 步矩角的准确度		± 5% (max)
Bearing Type 轴承类型		ABEC 5P Deep Groove Permanently Sealed & Lubricated

3. Signal Input Waveform

3-1. Input Signal Waveform



T1 > 0.2μsec
T2 > 0.2μsec
T3 < 0.2μsec

Shaded area shows “ON” of photo coupler at input circuit.
The rising edge activates the motor.

4. Automatic Current Down 静态电流自动下降

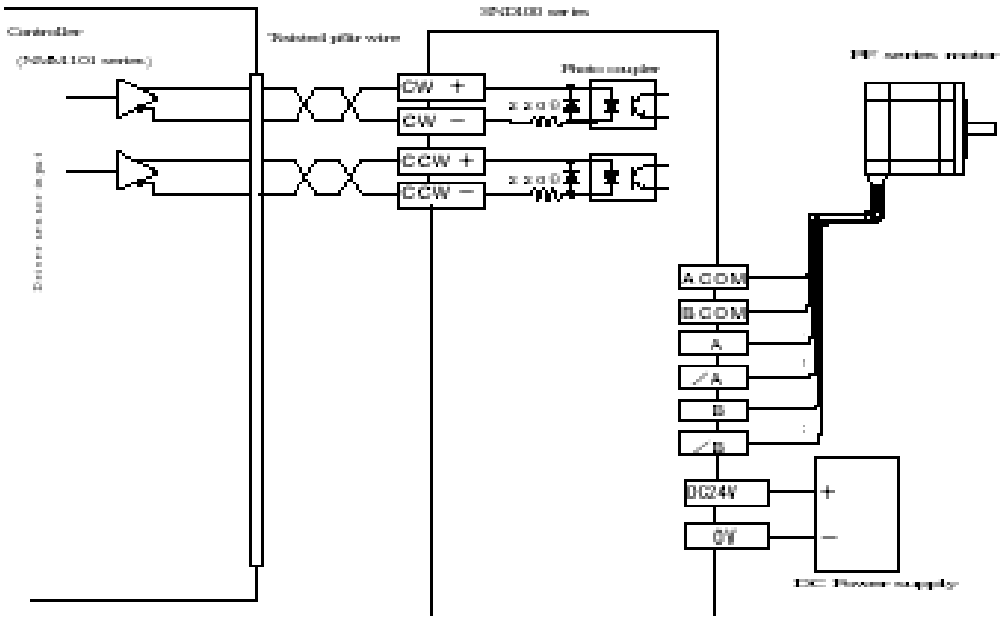
This driver is equipped with the auto-current down function where the motor current is reduced at stand still status. This reduces the motor heat build up when not running.

The factory setting at 50% of the motor running current set at C.ADJ. The function is activated 200 msec after the motor stops. i.e. pulse input changes from H to L.

5. Factory Default 工厂设定

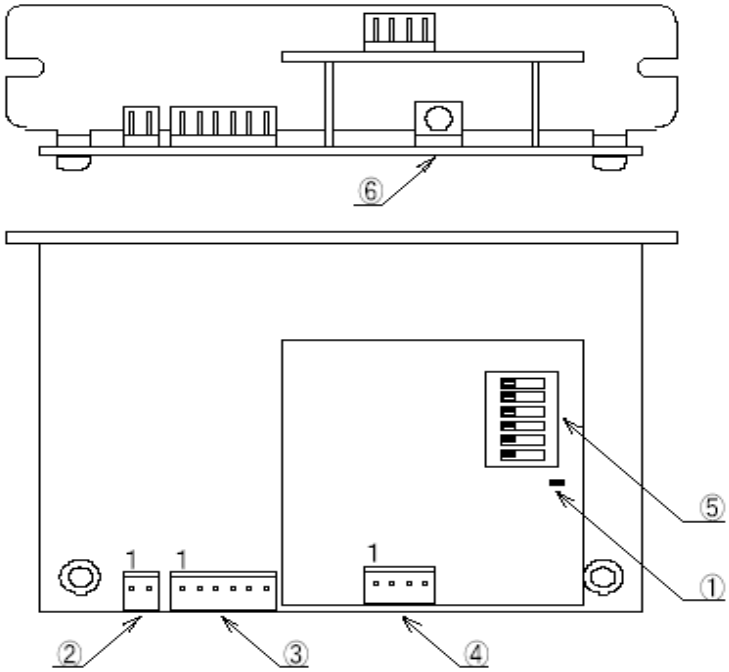
Driver model number	SND100-220L
Phase current	2.0 A/phase Max
Current down value	1.0 A/phase
Auto current down function	Auto current down function, valid
Input type	2 pulse type
Resolution	1/1 (FULL)

6. Connection Diagram 接线图



*(If controller outputs are DC24V, a resistor of value R = 1.2kΩ 1/2W is to be connected in series to the signals. Not necessary if the outputs are DC5V.)

7. Functions & Settings



① Power indicator LED (POWER) 电源指示灯

② Power Input Connector (CN1)

Connect DC24V supply to the driver.

Connector pin assignment	
1	DC 24V
2	0V

③ Motor Connector (CN2)

Connect motor leads to these terminals as follows :

Pin No.		PS44x	PS46x/49x	PF44x	PF46x	PF49x
1	COM A	Brn	Blk	Wht	Blk	Wht
2	COM B	Brn	Wht	Yel	Wht	Yellow
3	A	Red	Red	Red	Red	Red
4	/A	Wht	Red/Wht	Blue	Red/Wht	Blue
5	B	Yel	Grn	Grn	Grn	Green
6	/B	Blue	Grn/Wht	Blk	Grn/Wht	Black

* NC : no connection, tape and isolate individually

④ Signal I/O connector (CN3) ::-

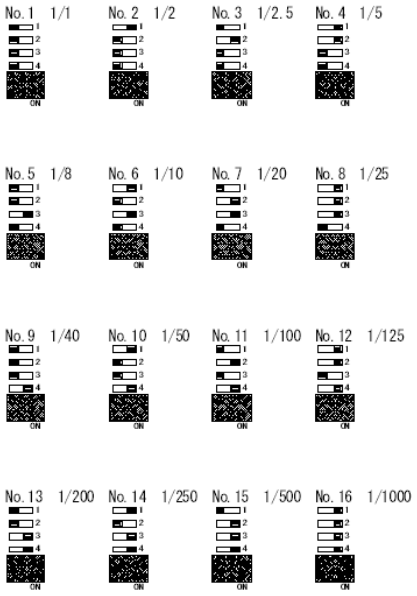
Pin No.	Driver Signal	Description
1	CW+ (Pulse+)	CW pulse input terminal (SW6 set to ON) This opto-isolated terminal accepts CW pulse train from an indexer Step / Pulse input terminal (SW6 set to OFF) This opto-isolated terminal accepts motor step pulses from an indexer.
2	CW- (Pulse-)	
3	CCW+ (Dir+)	CCW pulse input terminal (SW6 set to ON) This opto-isolated terminal accepts CCW pulse train from an indexer Direction input terminal (SW6 set to OFF) This opto-isolated terminal accepts CW/CCW direction input.
4	CCW- (Dir-)	

⑤ Switch Settings

These groups of switch settings setup the functions of the driver.

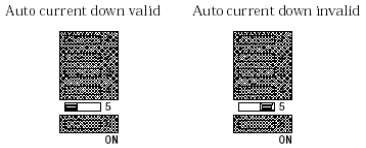
SW # 1~4 : Resolution selection

	Resolution
No. 1	1/1
No. 2	1/2
No. 3	1/2.5
No. 4	1/5
No. 5	1/8
No. 6	1/10
No. 7	1/20
No. 8	1/25
No. 9	1/40
No. 10	1/50
No. 11	1/100
No. 12	1/125
No. 13	1/200
No. 14	1/250
No. 15	1/500
No. 16	1/1000



SW # 5 : Auto current down function enable/disable (A.CD)

When motor is not running, motor current is reduced 50% of running current if set to Valid. This function is activated 200ms after motor stops. This feature can be disabled by keeping CW input terminal in ON (conducting) state or A.CD switch setting.

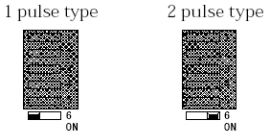


SW # 6 : Pulse input type selection (1P / 2P)

This switch sets the Pulse input type selection to :

1P mode ie Clock and Direction Mode

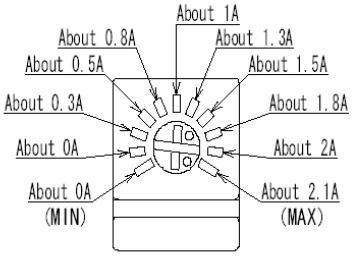
or 2P mode ie CW, CCW clock mode



⑥ Motor Running Current Adjustment (C.ADJ)

This adjusts the motor running current. Correct setting must be made to ensure motor does not overdrive or underdrive.

C.ADJ volume (4-1. Part name⑥) adjusts the value of motor driving current.

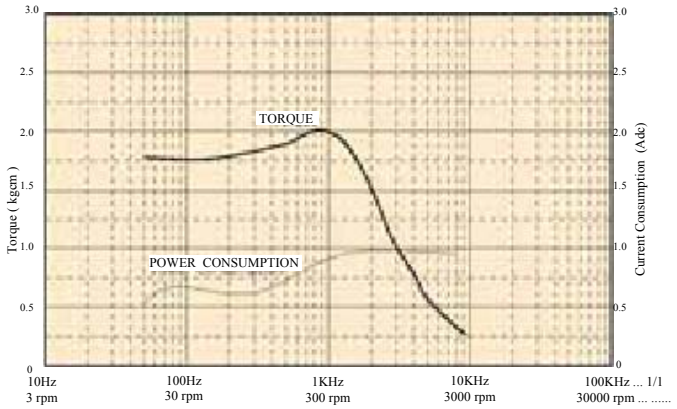


Left figure shows the position of volume adjusted about 2A.

Attention

- The above figure of volume is approximate value.
- There is a possibility to flow over current if volume is turned into the end position(MAX) of clockwise direction. Pay attention for the heating of a motor and a driver.

SND 100-220L-243B



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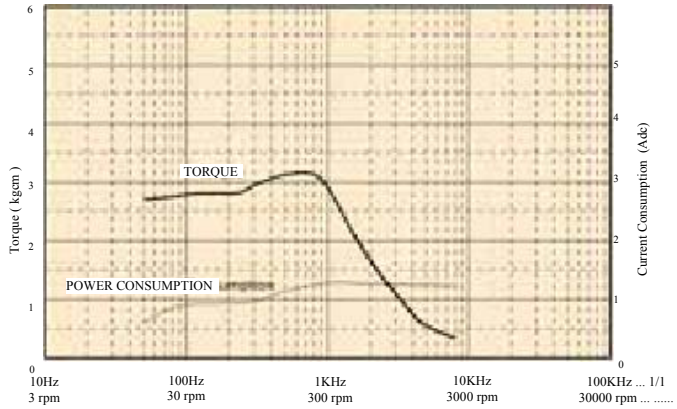
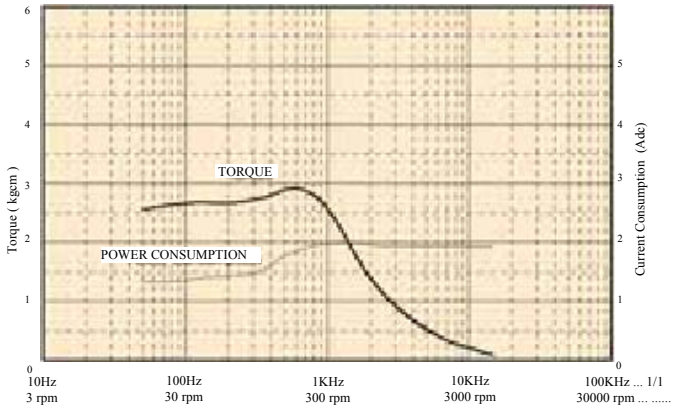
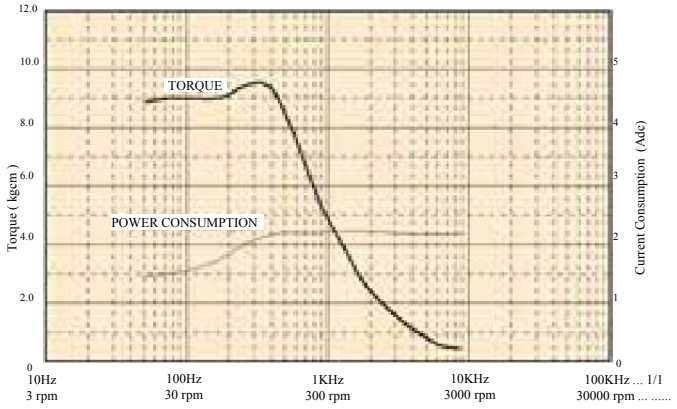


SND100-220L-245B

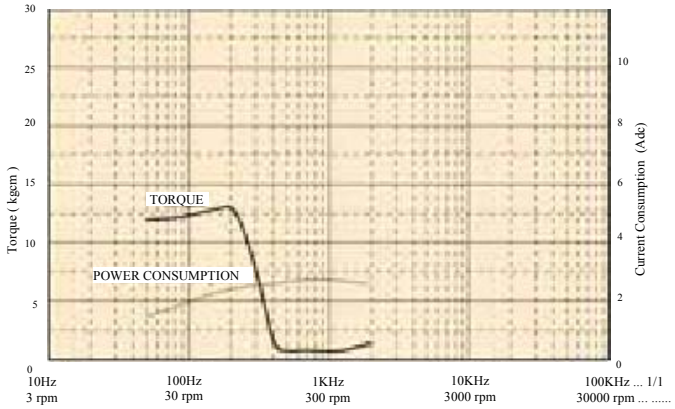
SND100-220L-264B



SND 100-220L-265B

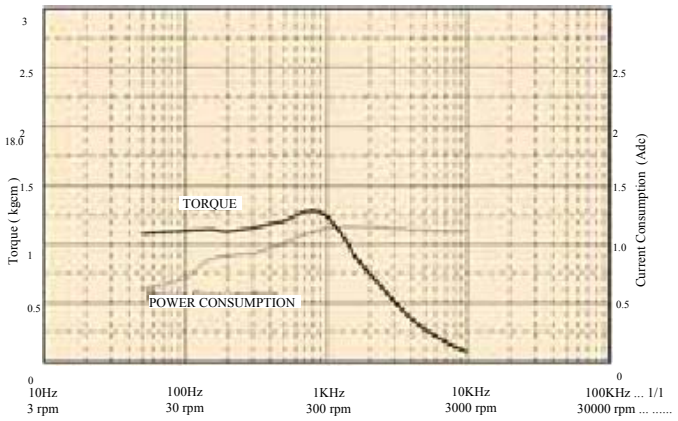


SND 100-220L-268B

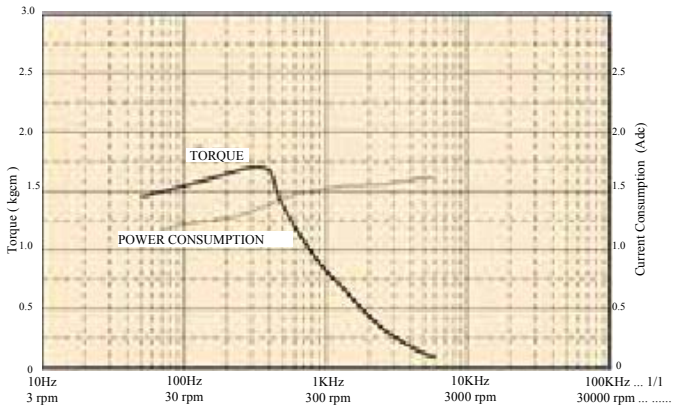


8. Performance Characteristics

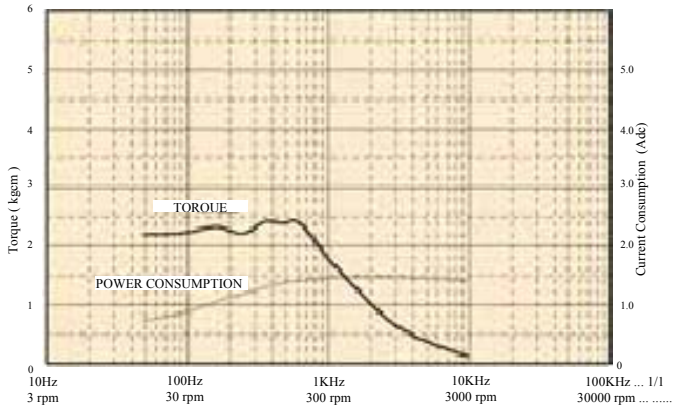
SND 100-220L-443B



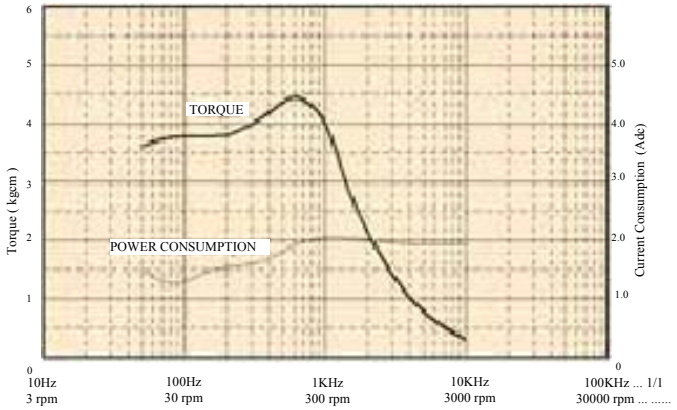
SND 100-220L-444B



SND 100-220L-445B



SND 100-220L-464B



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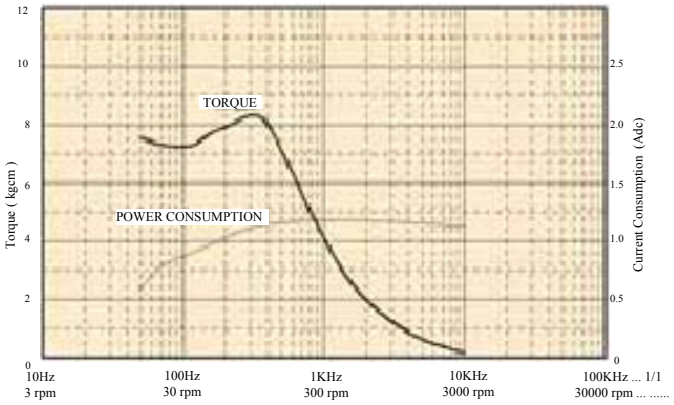

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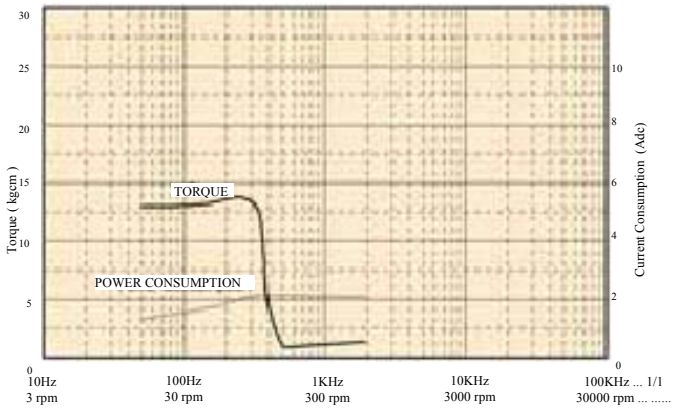
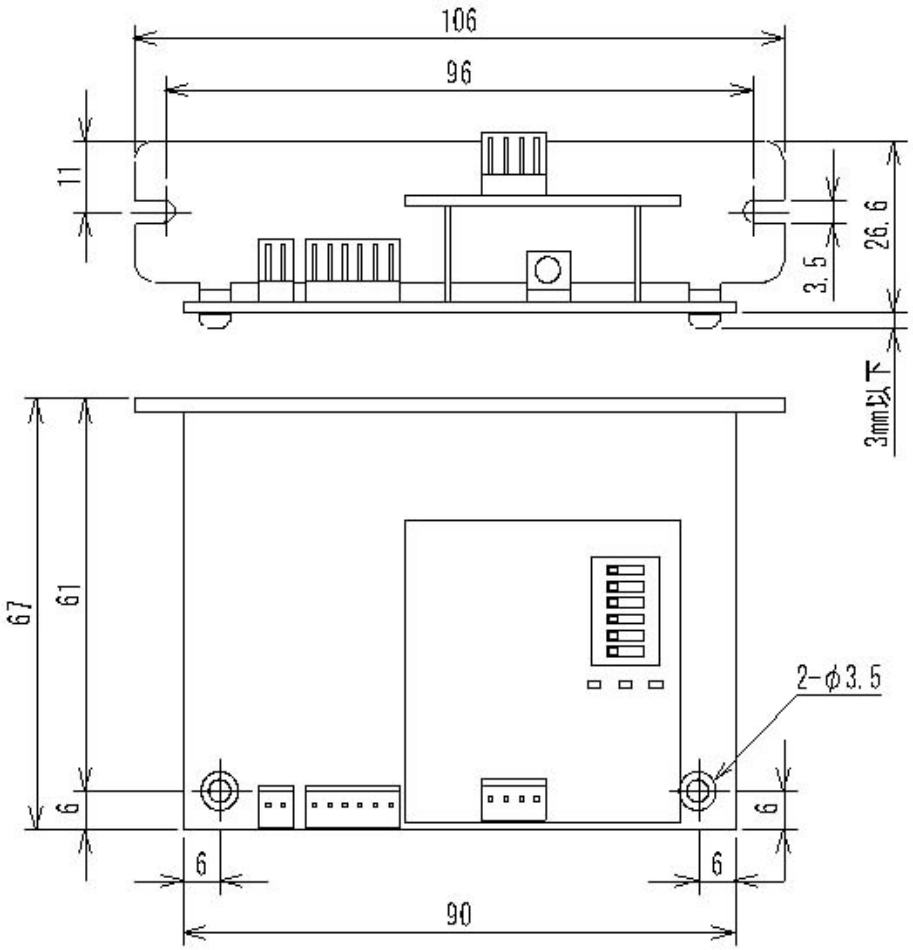


9. External Dimensions 外形尺寸



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